REMARKS

Claims 1-10 are all the claims pending in the application. Applicants thank the Examiner for indicating that claims 2, 3, 7 and 8 contain allowable subject matter, and thus, would be allowed if rewritten into independent form. Claims 1, 4-6, 9 and 10 presently stand rejected.

Prior Art Rejections:

Claims 1 and 6 are rejected under 35 U.S.C. § 102(b) as being anticipated by Milner (4,862,152).

Claims 1, 4, 5, 6, 9 and 10 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Katagiri et al. (2003/0001818) in view of Sasaki et al. (5,499,306).

Analysis

Claims 1 and 6 are the only claims in independent form; therefore, the following discussion is initially directed to this independent claim.

Rejection of claims 1 and 6 based on Milner:

Claim 1 is directed to a spatial motion recognition system that includes a motion detection unit and a control unit. The motion detection unit outputs position changes of a body of the system in space as an electric signal based on three-dimensional motions of the system body. The control unit tracks three-dimensional motions of the system body based on the electric signal outputted from the motion detection unit, producing a virtual handwriting plane having the shortest distances with respect to respective positions in predetermined time intervals based on three-dimensional track information obtained through tracking, and projecting the respective positions in the predetermined time intervals onto the virtual handwriting plane to recover the motions in space.

Milner is directed to a system for projecting a position of a transmitter to a display. A receiver frame 110 is constructed in the shape of the letter "L", and supports three receivers, 120, 130, 140 which define two axes. Circuitry in the receiver frame responds to signals from the receivers, the transmitter and the controller port plug and provides signals to the controller port plug indicative of the position of the transmitter 150 relative to the receiver frame.

FIG. 2 illustrates an example with the receiver frame 110 mounted on a computer 200 having a display 210, and FIG. 2 illustrates an example with a robot. Movement of the transmitter is defined by its x, y and z position.

Milner computes the position of the transmitter based on a fixed plane (i.e. the plane on which the receivers are disposed), whereas the present invention determines a plane (i.e., **produces a virtual handwriting plane**) that is most adjacent to respective points of a handwriting track in three-dimensional space, and then projects the positions onto the virtual plane.

As noted in the specification (page 8), a user performs handwriting motions while assuming that there is a virtual plane in the three-dimensional space; however the user typically does not actually follow the assumed virtual plane. Thus, the present invention produces a virtual plane based on the user's handwriting motions.

Milner does not take this issue into account in its device.

Thus, claim 1 is distinguishable from Milner.

Claim 6 is directed to a spatial motion recognition method for a motion recognition system. The method involves obtaining three-dimensional track information on a system body in

space, producing a virtual handwriting plane and projecting the positions in the predetermined time intervals onto the virtual handwriting plane and recovering the motions in space.

As mentioned above, Milner does not produce a virtual handwriting plane onto which the positions are then projected. Rather, Milner simply computes the distances of the transmitter from the receivers, and the plane is fixed based on the position of the receivers.

Rejection of claims 1, 4, 5, 6, 9 and 10 based on Katagiri and Sasaki:

Turning to the obviousness rejection of claims 1 and 6 based on Katagiri and Sasaki, Katagiri is directed to allowing entry of handwritten data without the use of a tablet.

In Katagiri, a camera is used to photograph the pen device being moved in midair, and outputs the image data. In the embodiment "B-1", two video cameras are used to photograph the pen device from two different angles in order to obtain three-dimensional coordinates of the pen device.

Sasaki is directed to a method and apparatus for recognizing the position of a camera on a robot. Sasaki utilizes the image information from the camera for obtaining the position of the camera/robot with respect to a workpiece. Sasaki is unrelated to handwriting detection. Sasaki merely translates the 3D position into coordinate for the display screen.

Both Katagiri and Sasaki utilize a completely different system for detecting the position changes of the pen than in the present invention.

Neither of the references **produces a virtual handwriting plane** according to the present invention. In particular, Sasaki does not produce a virtual handwriting plane having the shortest distances with respect to respective position in predetermined time intervals based on three-

dimensional track information obtained through tracking. The translation of the 3D position images into a 2D screen display is not equivalent to this feature of the invention.

As explained in the specification, the control unit of the present invention produces the virtual plane based on the three-dimensional track information obtained through tracking. Thus, the placement of the virtual plane is relative to the respective positions. This allows for respective positions to be projected onto the virtual plane.

In the prior art, the plane is fixed and the coordinates are translated to the fixed plane for display. However, in the present invention, the plane is determined based on the position of the track information, and then the points are projected onto the plane.

As noted in the specification, a user performs handwriting motions while assuming that there is a virtual plane in the three-dimensional space; however the user typically does not actually follow the assumed virtual plane. Thus, the present invention produces a virtual plane based on the user's handwriting motions.

Thus, claims 1 and 6 are not rendered obvious by the combination of cited references.

The remaining rejections are directed to the dependent claims 4, 5, 9 and 10. These claims are patentable for at least the same reason as claims 1 and 6 by virtue of their dependency therefrom.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

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The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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